AGENCY OF ENVIRONMENTAL CONSERVATION
DEPARTMENT OF FORESTS, PARKS & RECREATION

STATE OF VERMONT

FOREST INSECT AND DISEASE CONDITIONS
NORTHERN REGION

CALENDAR YEAR 1984

Prepared by:

Ronald S. Kelley
Forest Resource Protection
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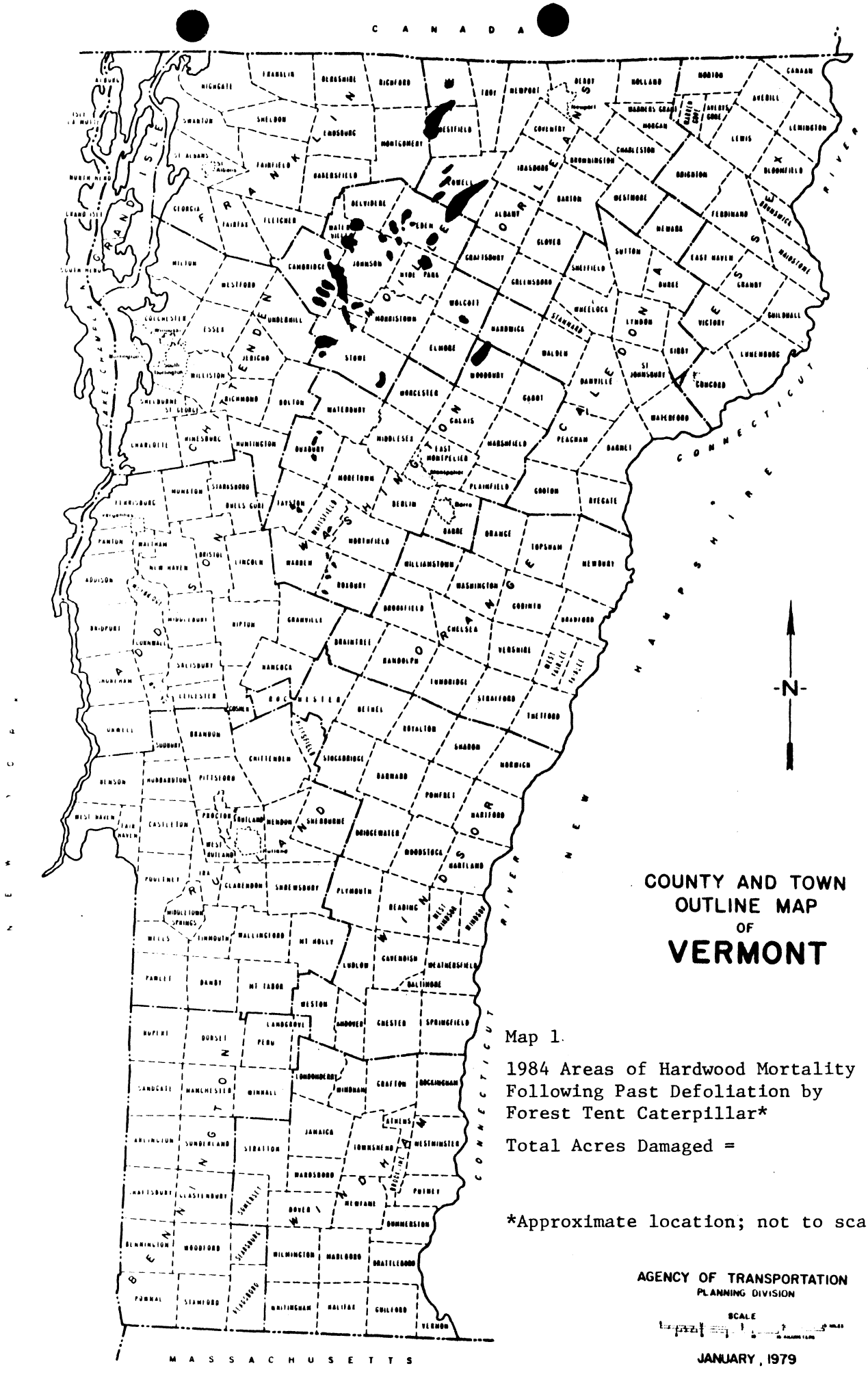
INTRODUCTION

The information in this report is based largely on aerial surveys to detect defoliation and mortality, as well as ground surveys and observations of forest resource protection personnel and other forestry staff.

Aerial surveys were flown in May (Districts IV and V) to detect early defoliation by Bruce Spanworm; in July (Districts IV and V) to detect Spruce Budworm damage; and in August (all districts) to detect late defoliation and hardwood mortality areas.

The winter of 1984 began with seasonable temperatures and snowfall. A warm spell for a couple weeks in February led to an unusually early sugaring season, but this ended abruptly with a return of cold weather in early March. Spring weather was unusually cool and wet for the second consecutive year, producing the wettest May on record for Vermont. This has led to a decrease in most insect populations but an increase in fungus disease problems. June and July temperatures averaged near normal, while precipitation was somewhat below normal for June and the tenth wettest on record for July. August temperatures averaged three to four degrees above normal with below normal precipitation.

The 1984 seed crop on most hardwood and conifer tree species was the heaviest seen in many years, except for the heavy seed crop on maple observed two years ago. Fir and spruce had more cones than anyone can remember having seen before, giving the tops a brownish color by late summer, similar to spruce budworm-damaged crowns.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

Map 1.

1984 Areas of Hardwood Mortality Following Past Defoliation by Forest Tent Caterpillar*

Total Acres Damaged =

*Approximate location; not to scale

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979

FOREST INSECTS

HARDWOOD DEFOLIATORS

Gypsy Moth, Lymantria despar, caused only very light defoliation in scattered areas of Addison and Chittenden Counties and current egg masses remain difficult to find.

Maple Leaf Cutter, Paraclemensia acerifoliella, damage remains light or restricted to the understory and lower portions of sugar maple crowns in most locations. Heavy adult emergence was observed in one sugarbush in Braintree but this produced only light larval population numbers and damage. One 29 acre sugarbush in Highgate was aerially sprayed with Sevin 80S with good results.

Forest Tent Caterpillar, Malacosoma disstria, caused only scattered light defoliation, observed from the ground only, in the counties of Lamoille, Caledonia and Orleans. Tree mortality and decline, mostly sugar maples, within areas defoliated between 1978 and 1982 became more evident this year. Nearly 21,000 acres containing mortality in Lamoille, Orleans and Washington Counties were mapped from the air. (Table 1, Map 1). Lamoille County has the heaviest damage. Most of the problem areas are known to have been defoliated.

TABLE 1. Acres of Mortality in 1984 Due Primarily to Defoliation by Forest Tent Caterpillar

	Acres of Mortality[1]			
County	Light	Moderate	Heavy	Total
Lamoille	2,890	4,557	1,107	8,554
Orleans	6,669	2,698	174	9,541
Washington	2,735	0	0	2,835
TOTAL	12,394	7,255	1,281	20,930

1. Light mortality = 1-10%, scattered or patchy
   Moderate mortality = 10-25%, scattered
   Heavy mortality = over 25%

Three years of data from plots established in 1982 in Camels Hump State Forest now indicate that partial cutting of a hardwood stand at the end of a defoliator outbreak can have a beneficial effect on residual trees, while cutting just before or during the outbreak has been observed to increase the amount of dieback and mortality. Plots were established to compare tree condition in an area that underwent a shelterwood harvest in the winter of 1981-82 to an adjacent uncut area. Both areas were heavily defoliated by forest tent caterpillar in 1980 and 1981, resulting in an average of over 30 percent crown dieback on the sugar maples in 1982.

Trees in the harvested area which showed slight improvement in 1983 compared to the unthinned area, are now showing substantial improvement. Tree crowns improved between 1983 and 1984 on 50 percent of the trees in the shelterwood area, while increased dieback was evident on only 15 percent of the trees - all of which had large logging wounds. In the unthinned area, crowns improved on only 11 percent of the trees while 19 percent had increased dieback.

Bruce Spanworm, Operophtera bruceata, defoliation did not materialize to the extent expected and caused only light to moderate sugar maple defoliation, which was widespread throughout the region but not aerially visible. Cool, wet weather during the larval period may have prevented heavier damage. Nine sugarbushes were surveyed during the winter of 1984 for numbers of eggs on lower boles of sugar maple. There wasn't a perfect correlation between egg counts and resulting infestation or defoliation levels but all bushes with egg counts of two or fewer per square foot had light to moderate defoliation of understory maples and light defoliation of overstory maples. Those with four or more eggs per square foot had light to heavy overall infestation or defoliation levels. Sugarbushes that had heavier than expected infestations tended to have abundant eggs on small saplings and seedlings that were not officially tallied as part of the survey procedure.

Three sugarbushes with heavy Bruce spanworm populations were aerially sprayed on 27 May. A 67 acre sugarbush in Glover and 10 acres of a sugarbush in Cabot were treated with Sevin 80S (1 lb. a.i. in 1 gallon of water per acre), while a 25 acre sugarbush in Cabot was treated with Bacillus thuringiensis (Dipel 4L) at the rate of 8 BIU (billions of international units) in 1 gallon of water per acre. Control was good in all locations but mortality of larvae in the sugarbush treated with Dipel continued to take place for several days after treatment, resulting in fewer survivors than in the other Cabot bush treated with Sevin.

Birch Skeletonizer, Bucculatrix canadensisella, and Birch Leaf Folder, Ancylis discigerana, defoliation of white and yellow birch dropped to such low levels that only a trace of damage in East Haven was detected.

OTHER HARDWOOD DEFOLIATORS

INSECT	HOST(S)	LOCALITY	REMARKS
American Dagger Moth *Acronicta americana*	Sugar Maple	Underhill	Light defoliation
Birch Leaf Miner *Fenusa pusilla*	White Birch Grey Birch	Widespread	Mostly moderate, similar to 1982 due to rainy weather
Eastern Tent Caterpillar *Malacosoma americanum*	Cherry Apple	Widespread	Very light and scattered

OTHER HARDWOOD DEFOLIATORS

INSECT	HOST(S)	LOCALITY	REMARKS
Elm Leaf Bettle *Pyrrhalta luteola*	Elm	Middlebury	Very heavy; lighter elsewhere in Addison County
Fall Cankerworm *Alsophila pometaria*			Not observed
Fall Webworm *Hyphantrea cunea*	Cherry Apple Birch, etc.	Widespread	Moderate-heaviest seen since 1976
Green Fruitworm *Lithophane antennata*			Not observed
Green Striped Mapleworm *Anisota rubicunda*			Not observed
Half Winged Geometer *Phigalia titea*			Not observed
Imported Willow Leaf Bettle *Plagiodera versicolora*			Not observed
Large Aspen Tortrix *Choristoneura conflictana*			Not observed
Linden Looper *Erranis tiliaria*			Not observed
Locust Leaf Miner *Odontata dorsalis*	Black Locust	Richmond Cambridge	Locally heavy
Maple Petiole Borer *Caulocampus acericaulis*			Not observed
Maple Trumpet Skeletonizer *Epinotia aceriella*	Sugar Maple	Widespread	Scattered light defoliation
Maple Webworm *Tetralopha asperatella*	Sugar Maple		Not observed
Mountain Ash Sawfly *Pristophora genicultata*	Mountain Ash	Widespread	Moderate to heavy damage in scattered locations

OTHER HARDWOOD DEFOLIATORS

INSECT	HOST(S)	LOCALITY	REMARKS
Oak Leaftier Complex *Psilicorsis reflexella* *Tetralopha* sp. *Telphusa quercinigraciella* *Morrisonia confusa*	Oak		Not observed
Orange Humped Mapleworm *Symmerista leucytis*			Not observed
Pear Sawfly *Caliroa cerasi*			Not observed
Pin Oak Sawfly *Caliroa sp.*			Not observed
Saddled Prominent *Heterocampa guttivata*	Hardwoods	Caledonia County	Occasional larvae
Satin Moth *Leucoma salicis*	Poplar	Georgia	Heavy on one tree
Solitary Leaf Roller *Sparganothis pettitana*	Sugar Maple	Widespread	Very light occasionally
Spiny Elm Caterpillar *Nymphalis antiopa*			Not observed
Spring Cankerworm *Paleacrita vernata*			Not observed
Uglynest Caterpillar *Archips cerasivoranus*	Cherry	Lamoille County	Sparse

SOFTWOOD DEFOLIATORS

Spruce Budworm, Choristoneura fumiferana, populations dropped to the lowest levels since the present outbreak began in 1975. Defoliation was generally light (less than 30 percent) throughout the 178,000 acres detected as infested in 1983. Unusually cool, wet spring weather for the second consecutive year is probably responsible for the population drop. Numbers of large larvae and pupae were down 90-95 percent compared to 1983, while numbers of male moths caught in pheromone traps placed in lightly infested stands were down 80 percent.

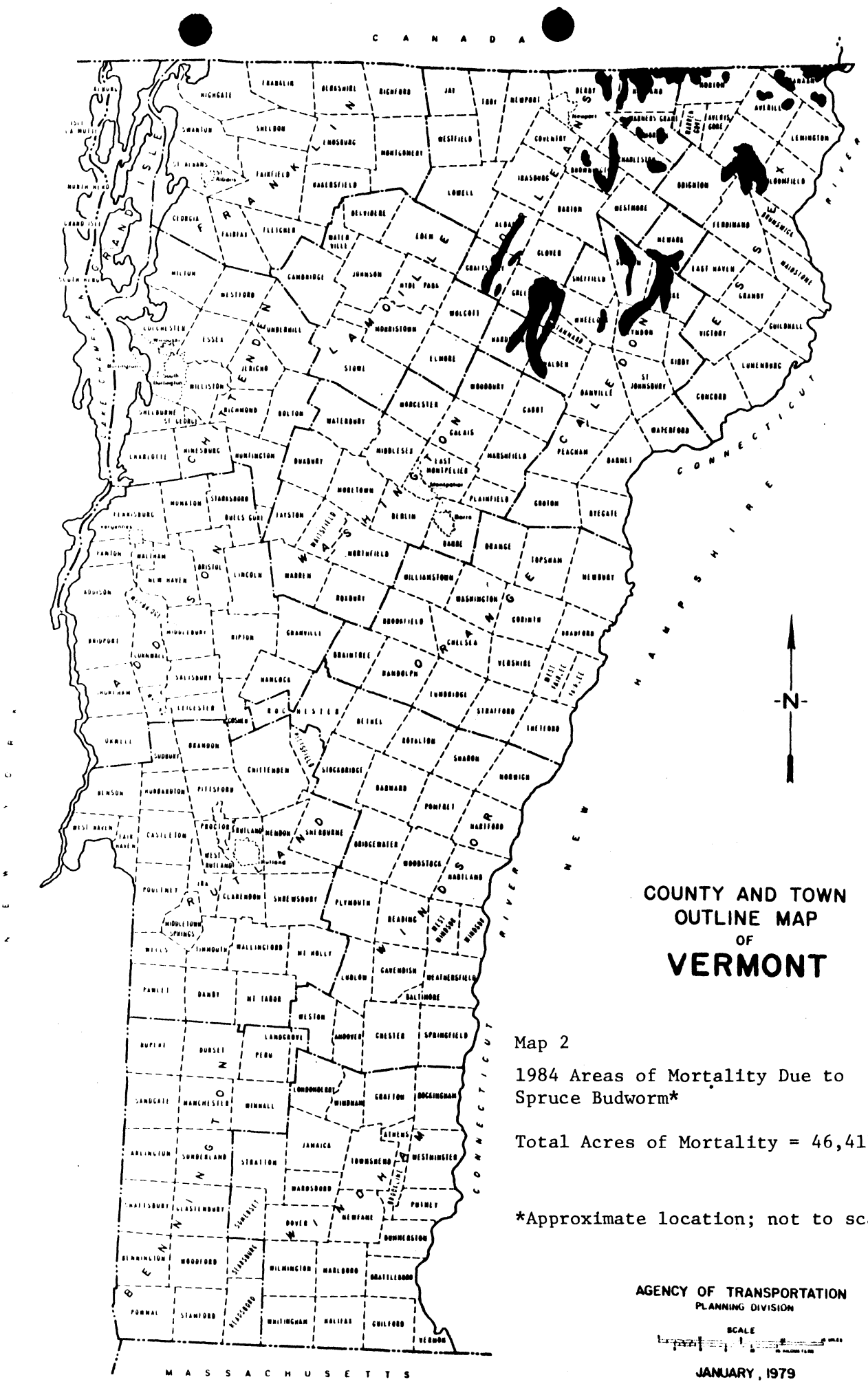
Acres of spruce-fir exhibiting mortality during the annual aerial survey dropped from 114,000 acres recorded in 1983 to 46,417 acres detected this year (Table 2, Map 2). Many of the more heavily damaged areas have been salvaged, while a very heavy cone crop may have masked the lighter damage this year.

Table 2. Acres of Mortality in 1983 Due to Spruce Budworm

	Acres of Mortality			
County	Light	Moderate	Heavy	Total
Caledonia	3,829	1,351	3,034	8,214
Essex	8,099	5,647	3,731	17,477
Orleans	4,534	8,711	6,958	20,203
Lamoille	0	0	523	523
TOTAL	16,462	15,709	14,246	46,417

A small suppression project was conducted this year to demonstrate the effectiveness of B.t. (Bacillus thuringiensis) at a total volume rate of 64 fluid ounces per acre instead of the 96 ounces per acre used in 1983. Dipel 6L was applied to 170 acres (58 acres in Craftsbury and 112 acres in Hardwick) at 12 BIU per acre (same insecticide rate as in 1983) using a small, fixed-wing aircraft. Defoliation in both spray blocks was less than 10 percent but budworm populations dropped to such unexpectedly low numbers that defoliation and number of postspray larvae in a nearby untreated area was equally low. Because budworm populations are currently very low, no suppression project is planned for 1985.

The Spruce Budworm Demonstration Project that was initiated in 1983 to deal with all phases of budworm management and accelerate woodland owner assistance continues to receive a lot of attention. Color infrared photography of 150,000 acres of spruce-fir in the project area has been obtained. This photography contains species composition, damage, height and crown-closure information which has been transferred to Ortho maps to serve as a data base for management planning. Under the project, two new leaflets are now available to the public: one is entitled DEER WINTER RANGE AND BUDWORM MANAGEMENT GUIDELINES, and the other is a VERMONT FOREST PEST LEAFLET ON SPRUCE BUDWORM.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

Map 2

1984 Areas of Mortality Due to Spruce Budworm*

Total Acres of Mortality = 46,417

*Approximate location; not to scale

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SCALE

JANUARY, 1979

OTHER SOFTWOOD DEFOLIATORS

INSECT	HOST(S)	LOCALITY	REMARKS
Arborvitae Leaf Miner *Argyresthia thuiella*	Arborvitae	Widespread	Light damage only
Introduced Pine Sawfly *Diprion similis*		Brookfield	Sparse
Larch Casebearer *Coleophora laricella*	Larch Tamarack	Stowe	Light damage only
Larch Sawfly *Pristophora erichosonii*			Not observed
Red Headed Pine Sawfly *Neodiprion lecontei*	Red Pine		Not observed
Spruce Bud Moth *Zeiraphera canadensis*	White Spruce	Widespread in northeast	Remains light
White Pine Sawfly *Neodiprion pinetum*		South Burlington	
Yellow-headed Spruce Sawfly *Pikonema alaskensis*			Not observed

SAPSUCKING INSECTS, MIDGES AND MITES

Balsam Gall Midge, *Paradiplosis tumifex*, populations remained a widespread problem in balsam fir Christmas tree plantations but damage was somewhat less heavy than in 1983 in most locations. Assistance in the form of evaluations and recommendations was provided to over 10 growers for control on about 100 acres of fir Christmas trees. Experimental treatments with hydraulic applications of Diazinon AG500 (2 tsps/gal) at various shoot lengths were conducted again this year to confirm whether sprays timed for shoot lengths between 1¼ and 1½ inches still gave the best control. Results confirmed that this was indeed the proper timing for maximum control. Experimental data was also collected from two plantations that received aerial applications of Diazinon at the rate of two pints per acre in one gallon of

water instead of the registered rate of five gallons of water. Resulting damage was compared with ground treated and untreated trees in the same plantations. The aerial treatments gave acceptable control of gall midge, although as one might expect, control was not as complete as when trees were completely drenched using ground equipment.

A second gall midge, Dasineura ~~paradiplosis~~ balsamicola, which occupies galls of P. tumifex and prevents it from reaching maturity, was extremely common (present in over 50 percent) in galls examined from eight plantations from widely scattered locations. D. balsamicola looks very much like P. tumifex but it is not able to initiate gall formation. Instead, it acts as a natural control of the gall maker. When two larvae are found in the same gall between late August and November, it is almost always one of each species, with the gall maker stunted in size and lighter in color. If the abundance of D. balsamicola is as widespread as the samples examined seem to indicate, gall midge populations should drop to lower levels in 1985.

OTHER SAPSUCKING INSECTS, MIDGES & MITES

INSECT	HOST(S)	LOCALITY	REMARKS
Balsam Twig Aphid Mindarus abietinus	Balsam Fir	Widespread	Light damage; rainy weather probably prevented heavier damage
Balsam Woolly Aphid Adelges piceae	Balsam Fir		Not observed
Cooley Spruce Gall Aphid Adelges cooleyi	Blue Spruce Douglas Fir	Moretown	Heavy damage to five acres of Christmas trees
Eastern Spruce Gall Aphid Adelges abietis	Spruce	Widespread	Light damage as in 1983
Hickory Gall Aphid Phylloxera caryaecaulis			Not observed
Oystershell Scale Lepidosaphes ulmi	Beech Flowering Crab	Stowe Morristown	Light
Pine Bark Aphid Pineus strobi	White Pine	Widespread	Light-moderate populations

OTHER SAPSUCKING INSECTS, MIDGES & MITES

INSECT	HOST(S)	LOCALITY	REMARKS
Pine Needle Midge *Contarinea baeri*	Scots Pine	Brookfield Morristown	Light; first time observed since 1978
Pine Needle Scale *Chionapsis pinifoliae*	Mugho Pine	Middlebury	
Pine Spittlebug *Aphrophora parallela*			Not observed
Pine Thrips *Gnophothrips* sp.			Not observed
Root Aphid *Prociphilus americanus*	Balsam Fir Fraser Fir	Morristown Wolcott	Widespread mortality of Fraser Fir Christmas tree seedlings in Morristown
Spruce Spider Mite *Oligonychus ununguis*			Not observed

BUD, SHOOT AND STEM INSECTS

Balsam Shootboring Sawfly, *Pleroneura bruneiicornis*, caused widespread tip mortality of balsam fir Christmas trees after being common in 1982 but not observed in 1983. This supports the theory that this insect spends every other year in the ground in any one locality. Therefore, don't expect abundant damage again until 1986. Heaviest damage observed this year was to a plantation in Wolcott that had received repeated applications of herbicides and insecticides.

OTHER BUD, SHOOT AND STEM INSECTS

INSECT	HOST(S)	LOCALITY	REMARKS
Ambrosia Beetle *Xyloterinus politus*	Birch	Widespread	Common on declining birches
Locust Borer *Megacyllene robiniae*			Not observed
Northern Pine Weevil *Pissodes approximatus*			Not observed

STEM DISEASES

Scleroderris Canker, caused by Gremmeniella abietina, was found in seven previously negative towns this year (Map 3) during a survey of 76 plantations in 15 towns bordering the quarantine zone. This brings the total number of infected towns to 62. Towns adjacent to existing quarantine boundaries have been surveyed annually since the quarantine was established in 1977. The last time any new towns were found to contain Scleroderris-infected pines was in 1980. Seven of nine plantations found positive for the first time this year had been previously surveyed for the presence of Scleroderris. The cool, wet spring of 1983 is probably responsible for a dramatic increase in the amount of Scleroderris infection observed this year. Since the spring of 1984 was also cool and wet, another increase in rate of infection is likely to become noticeable in 1985.

One of the new positive plantations consists of five acres of 20-year-old Scots pine in Kirby that contains the heaviest mortality of large trees yet found in Vermont. Scots and white pine at Lyndon State Forest were also found to be infected this year. Some of the Scots pine reproduction in the understory of this plantation was observed to have nearly every new shoot infected, while infection on the more resistant white pine was common enough to be quite noticeable. Infection had apparently begun on a lower slope of the plantation where some mortality of Scots pine reproduction was evident. The total number of plantations now known to be infected is 107, consisting of 90 red pine plantations and 17 Scots pine plantations, representing 761 and 125 acres, respectively. Tree mortality is present within 10 plantations, comprising 119 acres.

Christmas tree inspections were conducted for 47 pine plantations within 26 towns in the quarantine area. Scleroderris was not found on any Christmas trees this year, except for one plantation that was found to be infected in 1983 and remained positive in 1984.

Beech Bark Disease, caused by Cryptococcus fagisuga and Nectria coccinea, var. faginata, continues to cause widespread mortality. Beech scale populations are noticeably increasing in many locations. Some trees in Stowe have the heaviest infestations seen in 10 years.

White Pine Blister Rust, caused by Cronartium ribicola, appears to be increasing. Many new infections were observed this year and many trees died from past infection. One large ornamental hedgerow planting in Waterbury had fatal infections on about 10 trees. The state nursery was surveyed for Ribes and found to be satisfactory following last year's control project.

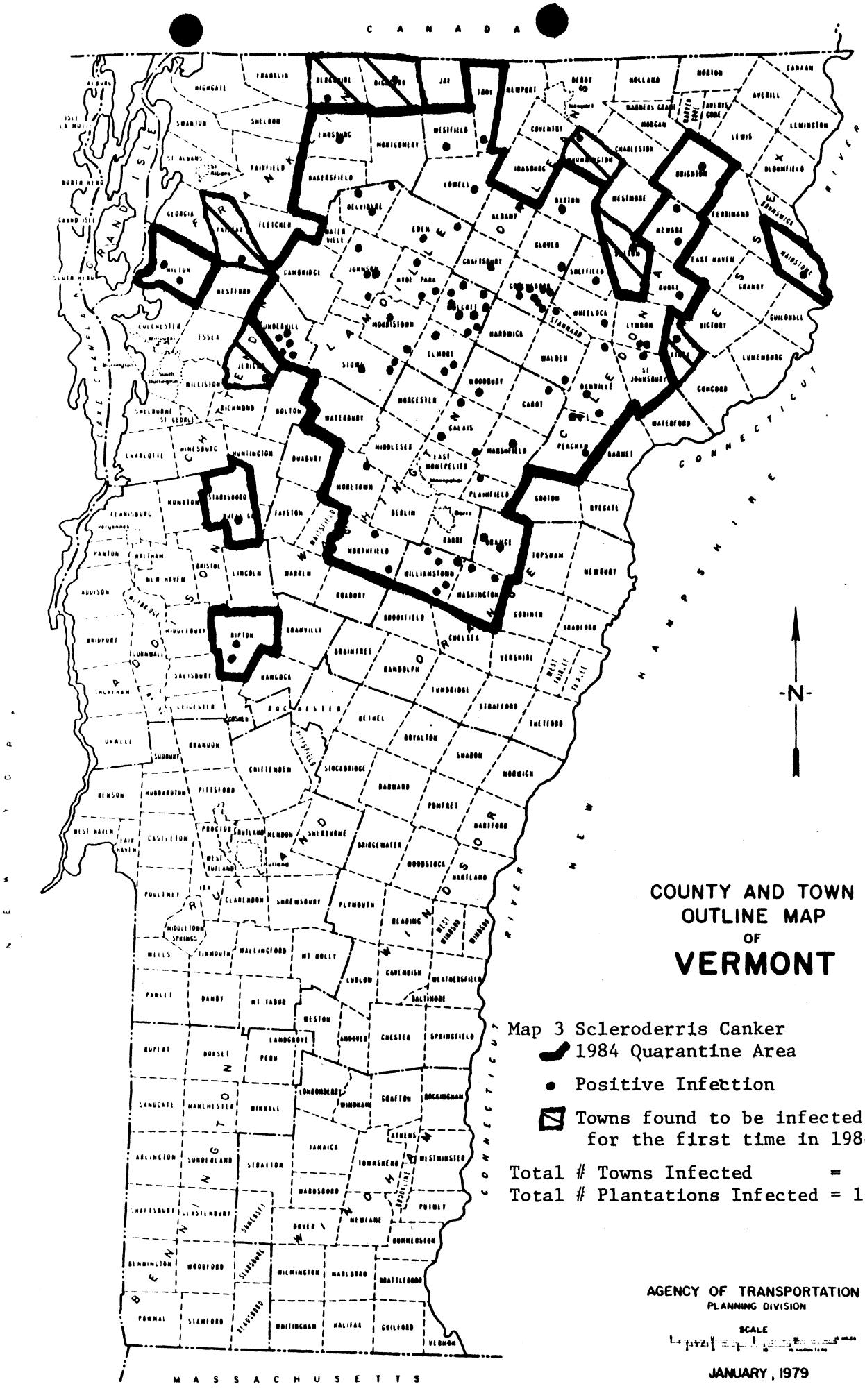
Maple Canker, caused by Steganosporium sp., was associated with widely scattered branch dieback on roadside and ornamental sugar maples.

OTHER BUD, SHOOT AND STEM INSECTS

INSECT	HOST(S)	LOCALITY	REMARKS
Pales Weevil *Hylobius pales*	Christmas trees	Widespread	Mostly light damage
Pine Gall Weevil *Podapion gallicola*	Red Pine		Not observed
Pitted Ambrosia Beetle *Corthylus punctatissimus*	Sugar Maple	Barton	Causing 5% mortality of sugarbush seedlings
White Pine Weevil *Pissodes strobi*	Spruce Pine	Widespread	Increasing, with heavy damage throughout

BARK BEETLES

INSECT	HOST(S)	LOCALITY	REMARKS
Eastern Larch Beetle *Dendroctonus simplex*	Tamarack		Associated with larch decline
Pine Engraver *Ips pini*			Not observed
Red Turpentine Beetle *Dendroctonus rufipennis*			Not observed



COUNTY AND TOWN OUTLINE MAP OF VERMONT

Map 3 Scleroderris Canker

1984 Quarantine Area

• Positive Infection

Towns found to be infected for the first time in 1984

Total # Towns Infected = 62

Total # Plantations Infected = 107

AGENCY OF TRANSPORTATION
PLANNING DIVISION

SCALE

JANUARY, 1979

OTHER STEM DISEASES

DISEASE	HOST(S)	LOCALITY	REMARKS
Black Knot *Apiosporina morbosum*	Cherry	Widespread	Common
Cytospora Canker			
Cytospora chrysosperma	Silver Poplar	St. Johnsbury Ornamentals Concord	
Cytospora kunzei	Blue Spruce	Scattered throughout	
Dutch Elm Disease *Ceratocystis ulmi*	Elm	Widespread	
Fireblight *Erwinia amylovora*	Mountain Ash	Lamoille County	Heavy local damage
Hypoxylon Canker *Hypoxylon pruinatum*	Aspen	Throughout	
Phomopsis Blight *Phomopsis juniperovora*	E. Red Cedar	Panton	
Verticillium Wilt *Verticillium albo-atrum*			Not observed
Woodgate Gall Rust *Endocronartium harknessii*	Scots Pine	Widespread	Increasing. Observed in 28% of plantations inspected for Scleroderris Canker

FOLIAGE DISEASES

Anthracnose, caused by *Gloeosporium* spp. caused widespread damage to leaves of many hardwood species, especially sugar maple and red oak ornamentals. Damage to forest trees was common but not as noticeable as in 1983.

Fir-Fern Rust of balsam fir, caused principally by *Uredinopsis mirabilis*, caused widespread defoliation of balsam fir Christmas trees but damage to individual trees was not as heavy as in 1983. Still, this was the most common problem observed in fir plantations, being reported as present in 25 plantations comprising 200 acres. Damage was moderate to heavy on 110 of these acres. Many Christmas tree growers mowed their plantations to keep down the alternate host fern plants, while a few resorted to herbicide treatments using Asulox or Roundup.

Dr. Dale Bergdahl at the University of Vermont experimented with protective fungicide treatments for fir as an alternative or supplement to killing the ferns. He found that Bayleton at the rate of one ounce of active ingredient per 50 gallons of water, plus a spreader-sticker applied every other week between 15 May and 15 June, gave excellent control. One such application, however, gave adequate control.

OTHER FOLIAGE DISEASES

DISEASE	HOST(S)	LOCALITY	REMARKS
European Larch Needlecast *Mycosphaerella laricina*	European Larch	Jericho Underhill Stowe	First found this year in Jericho by D. Bergdahl, UVM; I.D. confirmed by R. Patton, U of Wisc.
Lophodermium Needlecast *Lophodermium pinastri*	Scots Pine	Widespread	Heavy damage to some Christmas trees
Rhabdocline Needlecast *Rhabdocline pseudotsugae*	Douglas Fir	Williamstown Waitsfield	Moderate damage to individual Christmas trees; heavy on ornamentals
Rhizosphaera Needlecast *Rhizosphaera kalkhoff*	Blue Spruce	Williamstown Irasburg Johnson	Not previously known to be present in Vermont
Swiss Needlecast *Phaeocryptopus gaumani*	Douglas Fir		Not observed

ROOT ROTS

DISEASE	HOST(S)	LOCALITY	REMARKS
Annosus Root Rot *Heterobasidion annosum*	Pine		No new sites
Shoestring Root Rot *Armillaria mellea*	Many	Widespread	Commonly associated with declining trees

DIEBACKS, DECLINES AND ENVIRONMENTAL DISEASES

Larch Decline continues to be evident on much of the 7169 acres mapped in the past (9000 acres statewide), but little new mortality is taking place in most areas. One exception is the Northeast Kingdom where some disease spread was observed.

Ash Dieback continues to be common, with the most mortality observed within areas previously defoliated by forest tent caterpillar and in un-defoliated stands in Addison County. Crown dieback stabilized this year on white ash plot trees in Bolton that exhibited an increase in dieback between 1982 and 1983.

White Pine Needle Blight affected susceptible white pines for the second consecutive year in most of the region, being observed in all of the counties except Essex. Some pathologists believe that symptoms are produced by cloudy, moist weather, abruptly followed by continuous hot, dry weather during needle elongation. Although we had cloudy, wet weather, it is questionalbe whether this was followed abruptly by hot, dry weather during needle elongation. The only hot spell recorded was for the second week of June. Maybe needle elongation was not complete in northern areas but was in southern areas at this time. This could account for the fact that the blight was not observed in southern Vermont this year. Or, maybe another suspected cause such as air pollution, particularly ozone, is important. At any rate, many of the same trees exhibiting blight symptoms this year were similarly affected last year.

Birch Decline, especially of white birch, continued to be evident this year, especially on well-drained sites.

Mortality due to "wet feet" in low-lying areas was more extensive than ever before due to the "Flood of '84".

Maple Decline became more evident this year, particularly in stands previously defoliated, as discussed under "Forest Tent Caterpillar". A state-wide northern hardwood decline survey was initiated this year to compare mortality and decline between (1) stands that were defoliated by forest tent caterpillar and have noticeable mortality as mapped by aerial survey; (2) stands that were defoliated by the forest tent caterpillar but lack noticeable mortality from the air; and (3) non-defoliated northern hardwood stands. This survey will be completed in 1985.

Scattered, widespread frost caused light shoot damage to hardwood and conifer shoots in Washington and Orange Counties in late May. An 85 acre sugarbush in Richford was also observed to have moderate frost damage to leaves on the north side of the trees.

ANIMAL DAMAGE

ANIMAL	SPECIES DAMAGED	LOCALITY	REMARKS
Deer			Not observed
Mouse			Not observed
Porcupine		Widespread	Damage increasing in some areas
Squirrel	Spruce	Widespread	Heavy clipping of tips, especially of Norway Spruce during the winter
Squirrel	Maple tubing	Widely scattered, especially in Caledonia County	Down from 1981 peak but still causing serious economic losses in some sugarbushes